In the Claims:

Please cancel claim 1. Please amend claims 2-12, 19, 22, 25, and 28-29. Please add new claim 31. The claims are as follows:

1. (Canceled) .

2. (Currently amended) ~~The method of claim 1, further comprising~~ A method of power supply noise and signal coupling analysis for creating a frequency-dependent electrical model related to a microelectronic package, said method comprising the steps of:

extracting geometries from said microelectronic package;

partitioning said geometries into a plurality of cells, said cells having a characteristic size in each dimension of said geometries, wherein said characteristic size is derived from a fastest signal rise time of a signal adapted to propagate within the microelectronic package;

determining a first equivalent circuit for each of said cells;

for each pair of adjacent cells consisting of a first cell and a second cell, determining a second equivalent circuit for a conduction current between the first cell and the second cell and for an electromagnetic coupling between the first cell and the second cell; and

outputting a description of said first and second equivalent circuits configured for use in an electrical circuit simulator.

3. (Currently amended) The method of claim 2, wherein said cells comprise a rectangular shape having a width and a length, wherein said width and length ~~are~~ each ~~less then~~ do not exceed 1/20 in size of the wavelength of a knee frequency of the signal.

4. (Currently amended) The method of claim [[1]] 2, wherein said step of determining a first equivalent circuit includes the step of assigning a value of resistance, inductance and capacitance of each resistor, inductor, and capacitor, respectively, in said first equivalent circuit.

5. (Currently amended) The method of claim [[1]] 2, wherein determining a second equivalent circuit comprises modeling at least one electrical interaction between said first cell and said second cell of said pair of adjacent cells, said at least one electrical interaction being selected from the group consisting of a conduction current interaction, an electric field interaction, a magnetic field interaction, and combinations thereof.

6. (Currently amended) The method of claim [[1]] 2, wherein said first equivalent circuit of said cell includes at least one functional components located within said cell, said at least one functional component being selected from the group consisting of a signal via, a power supply via, a signal wire, a conductive plane, and combinations thereof.

7. (Currently amended) The method of claim [[1]] 2, wherein said first equivalent circuit of said cell is configured to represent at least one transmission line model having at least one functional component within said cell, said at least one functional component being selected from the group consisting of a signal via, a power supply via, a signal wire, a conductive plane, and combinations thereof.

8. (Currently amended) The method of claim [[1]] 2, wherein said first equivalent circuit of said cell is configured to represent at least one inductive coupling model having at least one functional component within said cell, said at least one functional component being selected from the group consisting of a signal via, a power supply via, a signal wire, a conductive plane, and combinations thereof.

9. (Currently amended) The method of claim [[1]] 2, wherein said first equivalent circuit of said cell is configured to represent at least one capacitive coupling model having at least one functional component within said cell, said at least one functional component being selected from the group consisting of a signal via, a power supply via, a signal wire, a conductive plane, and combinations thereof.

10. (Currently amended) The method of claim [[1]] 2, wherein said first equivalent circuit of said cell is configured to represent at least one resistive model having at least one functional component within said cell, said at least one functional component being selected from the group consisting of a signal via, a power supply via, a signal wire, a conductive plane, and combinations thereof.

11. (Currently amended) The method of claim [[1]] 2, wherein determining a first equivalent circuit of said cell comprises modeling at least one electrical interaction within said cell, said at least one electrical interaction being selected from the group consisting of a conduction current interaction, an electric field interaction, a magnetic field interaction, and combinations thereof.

12. (Currently amended) A method of power supply noise and signal coupling analysis of the electrical interactions between functional components of an electrical system, said electrical system formed in a medium, said method comprising:

categorizing said functional components into at least one functional category;

extracting geometries from said electrical system based on said functional category;

dividing said electrical system into a plurality of cells, wherein each cell has at least one directly neighboring cell, wherein each cell has a length and a width dimension, said length and width dimension generally being equal to the maximum length and width defined by a fraction of the wavelength corresponding to ~~the~~ a knee frequency of a signal;

determining whether functional components are present within given ones of said cells;

modeling electrical interactions between functional components within said given cells;

determining which functional components are located in directly neighboring cells;

modeling electrical interactions between functional components located in directly neighboring cells;

calculating equivalent circuits related to the electrical interactions between said functional components within said cells and between directly neighboring cells; and

outputting said equivalent circuits in a format usable by an electrical circuit simulator.

13. (Original) The method according to claim 12, wherein said fraction of the wavelength corresponding to the knee frequency is one-twentieth.

14. (Original) The method according to claim 12, wherein said functional categories include at

least one category selected from the group consisting of power vias, signal wires, and power planes.

15. (Original) The method according to claim 12, wherein the step of modeling electrical interactions between functional components within a given cell further comprises:

determining an equivalent circuit composed of lumped elements for the functional components within each of said cells, said equivalent circuit configured to model electromagnetic coupling between functional components located within said cells, wherein said functional components include signal vias, power supply vias, signal wires, and conductive planes.

16. (Original) The method according to claim 12, wherein the step of modeling electrical interactions between functional components within a given cell further comprises:

determining an equivalent circuit composed of at least one transmission line model, said equivalent circuit configured to model electromagnetic coupling between functional components located within said cells, wherein said functional components include signal vias, power supply vias, signal wires, and conductive planes.

17. (Original) The method according to claim 12, wherein the step of modeling electrical interactions between functional components located in directly neighboring cells further comprises:

determining an equivalent circuit composed of lumped elements for the functional components within each of said cells, said equivalent circuit configured to model electromagnetic

coupling between functional components located within said cells, wherein said functional components include signal vias, power supply vias, signal wires, and conductive planes.

18. (Original) The method according to claim 12, wherein the step of modeling electrical interactions between functional components located in directly neighboring cells further comprises:

determining an equivalent circuit composed of at least one transmission line model, said equivalent circuit configured to model electromagnetic coupling between functional components located within said cells, wherein said functional components include signal vias, power supply vias, signal wires, and conductive planes.

19. (Currently amended) An electrical circuit signal coupling analysis system for modeling the electrical interactions between functional components of a microelectronic package, said analysis system comprising:

an electrical system formed in said microelectronic package, said electrical system including a plurality of functional components, wherein said functional components are one of signal vias, power supply vias, signal wires, and conductive planes;

an overall model of the electrical system, wherein said overall model is a representation of the electrical system as a plurality of ~~generally~~ cells having uniform length and width and height dimensions, said length and width dimensions <u>being</u> substantially equal to one another and are dependent on a fraction of the fastest signal rise time <u>of a signal</u>, said height dimension being dependent on power plane separation in the package, and wherein each cell has at least one directly neighboring cell which is a direct neighbor, wherein directly neighboring cells share a common face therebetween;

a plurality of intra-cell models, each intra-cell model representing the electrical interactions between functional components which are located within a particular cell;

a plurality of inter-cell models, each inter-cell model representing the electrical interactions between functional components which are located within directly neighboring cells; and

extraction means for deriving data corresponding to the electrical interactions which result from the intra-cell models and the inter-cell models.

20. (Original) The signal coupling analysis system of claim 19, wherein said intra-cell models,

and said inter-cell models, each utilize an equivalent circuit composed of lumped elements to model the electromagnetic coupling between functional components which are located within said cells.

21. (Original) The signal coupling analysis system of claim 19, wherein said intra-cell models and said inter-cell models utilize an equivalent circuit composed of a transmission line model for the electromagnetic coupling between functional components within each of said cells.

22. (Currently amended) A method of extracting a model, the method comprising:

determining a first dimension ~~derived from~~ whose maximum value is a fraction of the wavelength of ~~the~~ a knee frequency of a signal; ~~and~~

subdividing a circuit into ~~uniform~~ equivalent circuit subdivisions, wherein each circuit subdivision has a length and a width dimension equal to or less than said first dimension; and

~~combining~~ outputting a description of said circuit subdivisions to create said model for use in an electrical circuit simulator.

23. (Original) The method according to claim 22, wherein said fraction is one-twentieth.

24. (Original) The method according to claim 22, wherein said equivalent circuit subdivisions comprise lumped element circuits.

25. (Currently amended) The method according to claim 22, wherein said equivalent ~~circuits~~ circuit subdivisions comprise transmission line circuits.

26. (Original) The method according to claim 24, further comprising the step of modeling electrical interactions between equivalent circuits within a given circuit subdivision, wherein said equivalent circuit models electromagnetic coupling between functional components located within said circuit subdivison, and wherein said functional components include signal vias, power supply vias, signal wires, and conductive planes.

27. (Original) The method according to claim 25, further comprising the step of modeling electrical interactions between equivalent circuits within a given circuit subdivision, wherein said equivalent circuit models electromagnetic coupling between functional components located within said circuit subdivison, and wherein said functional components include signal vias, power supply vias, signal wires, and conductive planes.

28. (Original) The method according to claim 24, further comprising the step of modeling electrical interactions between equivalent circuits within directly neighboring circuit subdivisions, wherein said equivalent circuit models electromagnetic coupling between functional components located within said circuit subdivison, and wherein said functional components include signal vias, power supply vias, signal wires, and conductive planes.

29. (Currently amended) The method according to claim 25, further comprising the step of modeling electrical interactions between equivalent circuits within directly neighboring circuit subdivisions, further comprising the step of modeling electrical interactions between equivalent circuits within a given circuit subdivision, wherein said equivalent circuit models electromagnetic coupling between functional components located within said circuit subdivison, and wherein said functional components include signal vias, power supply vias, signal wires, and conductive planes.

30. (Currently amended) The method according to claim 22, wherein the step of combining the equivalent circuit subdivisions further comprises the step of assuming that only directly

neighboring circuit subdivisions interact.

31. (New) The signal coupling analysis system of claim 19, wherein said length and width dimension each do not exceed 1/20 in size of the wavelength of a knee frequency of the signal.